

## New and scarce European *Eupithecia* species (Geometridae)

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**Summary.** Information on eight scarce species of *Eupithecia* Curtis, 1825 from Europe is presented. Three species, namely *Eupithecia deverrata* Chrétien, 1910 from southern France, *E. reisserata* Pinker, 1976 from Greece and *E. spadiceata* Zerny, 1933 from southern Ukraine, are new to Europe. The little known species *Eupithecia lentiscata* Mabille, 1869 is recorded for southern Greece for the first time. *Eupithecia mandarinca* sp. n. from southern Crimea is described.

**Zusammenfassung.** Der vorliegende Artikel enthält Angaben zu acht interessanten und seltenen europäischen Arten der Gattung *Eupithecia* Curtis, 1825. Drei Arten (*Eupithecia deverrata* Chrétien, 1910 aus Süd-Frankreich, *E. reisserata* Pinker, 1976 aus Griechenland und *E. spadiceata* Zerny, 1933 aus der Süd-Ukraine) sind neu für die europäische Fauna. Eine wenig bekannte Art, *Eupithecia lentiscata* Mabille, 1869, wurde zum ersten Mal in Süd-Griechenland gefunden. *Eupithecia mandarinca* sp. n. wird von der südlichen Krim beschrieben.

**Résumé.** La présente contribution inclue de l'information concernant huit espèces européennes rares appartenant au genre *Eupithecia* Curtis, 1825. Trois espèces, à savoir *Eupithecia deverrata* Chrétien, 1910 du sud de la France, *E. reisserata* Pinker, 1976 de Grèce et *E. spadiceata* Zerny, 1933 du sud de l'Ukraine, sont nouvelles pour l'Europe. L'espèce peu connue *Eupithecia lentiscata* Mabille, 1869 est mentionnée du sud de la Grèce pour la première fois. *Eupithecia mandarinca* sp. n., de Crimée méridionale, est décrite.

Key words. Geometridae, *Eupithecia*, Europe.

### Introduction

*Eupithecia* is one of the most species-rich genera of the Geometridae. According to the latest and comprehensive publication (Müller 1996), this genus is represented by 123 species in Europe. During an examination of the material deposited in collections of the Zoologische Staatssammlung München (ZSM), Zoological Museum of the University of Copenhagen (ZMUC) and Zoological Institute, Russian Academy of Sciences, St. Petersburg (ZISP), eight interesting, local and scarce *Eupithecia* species were found. Three of them were hitherto unknown to the fauna of Europe, one species from the Crimea (Ukraine) is described here as new. A redescription of two species is given.

### *Eupithecia laquaearia* Herrich-Schäffer, 1848

Material examined. – 3♂, ♀, Greece, Timfi, Papigon, 800 m, 28.vi.1990, Schepler leg.; ♀, Delfi, 18–19.v.1997, Selling leg. (ZMUC).

Note. – The first record for Greece.

***Eupithecia groenblomi* Urbahn, 1969**

Material examined. – 7♂, ♀, Russia, Novgorodskaja oblast', village Kostroni near Batetskiy, ex larva, 16.vii.1999, 4., 14., 16.iv, 1., 20., 25., 26., 27., 31.vii, 11.viii.2000, Mironov leg. (larvae on the flowers and seeds of *Solidago virgaurea* from mid-August to late September); ♀, Leningradskaya oblast', Mikhailovskaya, at light, 25.vii.1999, Ivanov leg. (ZISP).

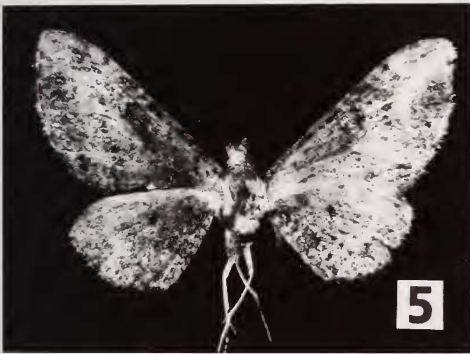
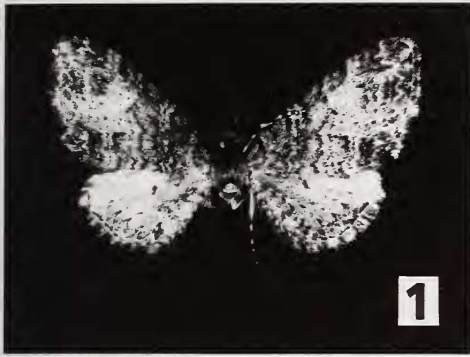
Note. – A very local and rare boreal species. It has been described from Finland (Pälkane) on the basis of adults reared from larvae. The first Russian records were made in St. Petersburg province: ♀, Kastenkaja near Tosno, 23.–29.vii.1995 (Söderman et al. 1998). The first record for Novgorodskaya oblast' (Novgorod province), where the species possibly approaches the southern limit of its range.

***Eupithecia lentiscata* Mabille, 1869****(Fig. 1)**

Material examined. – ♂, Greece, Lakonia, 5 km S. of Monemvasia, 3.II.1983, Christensen leg. (ZMUC).

Diagnosis. – Labial palpi light brown with whitish apices; extending beyond front of eyes approximately 0.9 times diameter of eyes (in male). Front and vertex covered with whitish grey scales. Antennal setae dense, length approximately 0.5 times width of flagellum (in male). Notum pale brownish grey with brown transverse band in front. Wingspan 17.5 mm, length of forewing 9.5 mm. Forewing rather short and broad; costa arched near base and apex; termen slightly curved; apex bluntly rounded; ground colour brownish grey, costal margin slightly darker; cubital vein covered with black scales; crosslines (basal, postbasal, antemedian and median) sinuate, not sharply angled near costa, distinctly marked with dark narrow costal spots; median line crosses discal spot; postmedian line inconspicuous, bent with right angle near costa, well marked with two pairs of short black touches (on the  $M_1$  and  $M_2$  veins and as well as on the  $Cu_2$  vein and under it); terminal area with distinct pale minutely waved subterminal line; pale tornal spot absent; discal spot obliquely elongate, very narrow, blackish. Hindwing paler, whitish grey with delicate brownish tint; crosslines indistinct, marked with minute dark dots on the  $Cu$  vein; terminal area darker, with waved inner border and with a series of small dark wedge-shaped dots; pale subterminal line fine, indented; discal spot large, rounded. Terminal lines on fore- and hindwings narrow, black-brown, interrupted by veins. Fringe light brownish grey with brown at vein endings.

Male genitalia (Figs. 7–10). – Uncus short, thin, biapical. Papillae rather elongated and narrow, length approximately 0.9 times uncus length. Valva without ventral process, widest medially and tapered to apex; apex of valva rather pointed; sacculus weakly sclerotized. Vinculum short and broad, with shallow medial hollow. Aedeagus large and thick, length equal to valva length; approximately 3.5 times longer than medial width. Vesica membranous; with large striated round pouch; armed with three stout, heavily sclerotized horn-like sclerites (one smaller almost straight, one slightly curved along the length and sharply curved at base, the 3rd sclerite approximately two times longer than others, with broadened irregular base) and with one short twisted sclerite at ductus ejaculatorius base. 8th sternite narrow; base broadened with shallow basal hollow; two basal processes pointed laterally; apical processes very short and weakly sclerotized. Female unknown.



**Figs. 1–6.** *Eupithecia* spp.: 1 – *E. lentiscata* Mabille, 1869 ♂ (Greece, Lakonia); 2 – *E. deverrata* Chrétien, 1910 ♂ (France, Corbières); 3 – *E. mandarinca* sp. n., holotype ♀ (Ukraine, Crimea); 4 – *E. reisserata* Pinker, 1976 ♀ (Greece, Arkadia); 5 – *E. spadiceata* Zerny, 1933 ♀ (Ukraine, Crimea); 6 – *E. spadiceata* Zerny, 1933 ♀ (Russian Federation, Daghestan). Photographs by V. N. Tanasiychuk and B. A. Anokhin.

Distribution. – Corsica, S. Greece.

Similar species. – Closely related to *E. abbreviata* and *E. dodoneata*, the only two species with which it could be confused. *E. abbreviata* has the forewing more pointed and elongated in proportion, the ground colour more brown with distinctly paler medial area between discal spot and postmedian line, the small pale tornal dot is present; the hindwing more brown with termen more deeply concave and with more conspicuous crosslines than those in *E. lentiscata*. In the male genitalia of *E. abbreviata*: the valve with large ventral process, the sacculus heavily sclerotized, the vesica armed with two horn-like sclerites (one very long and other short, basally broadened) and with a single elongated curved sclerite. *E. lentiscata* can be distinguished from *E. dodoneata* by more obtuse forewing, the less angulated basal, postbasal and antemedian lines near the costa, the smaller and narrower discal spots on the forewings, and by the less deeply concave termen of the hindwing. The very short 8th sternite, the only small heavily sclerotized horn-like sclerite, one pointed weakly sclerotized sclerite and elongated twisted sclerite at ductus ejaculatorius base on the vesica render it easy to distinguish the male genitalia of *E. dodoneata* from those of *E. lentiscata*.

Note. – The first record for Greece.

### *Eupithecia euxinata* Bohatsch, 1893

Material examined. – ♂, Russia, Krasnodarskiy krai (territory), Abrau-Dyurso near Novorossiysk, 8.x.1997, Stschurov leg. Also recorded from Cyprus: ♂, K. K. T. C., Dipkarpaz, 28.xii.1993, Ahola leg.; ♀, K.K.T.C., Kantarara, 700 m, 29.xii.1993–1.i.1994, Ahola leg. (ZISP).

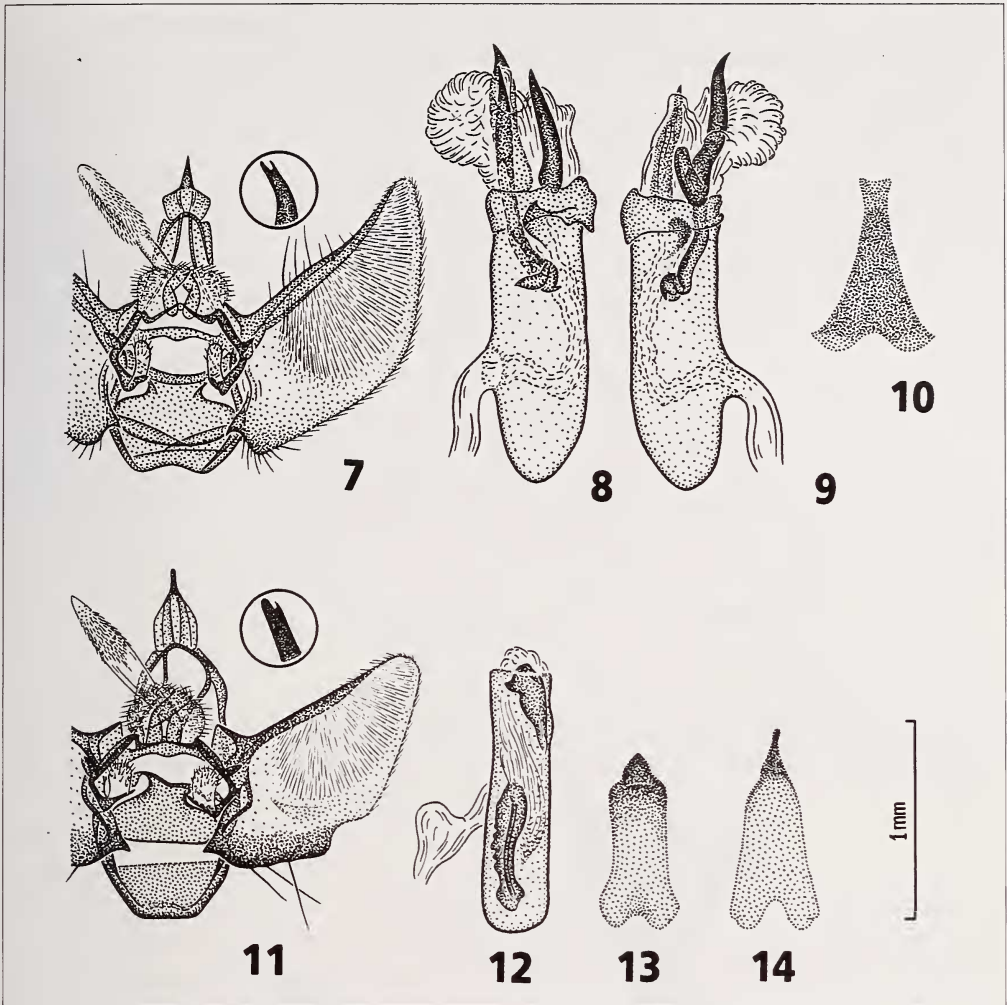
Note. – The first record for Russia and Cyprus.

### *Eupithecia deverrata* Chrétien, 1910

(Fig. 2)

Material examined. – ♂, France, Corbières, Albas, 400 m, 13.v.1975, Lukasch leg. (ZSM).

Diagnosis. – Labial palpi yellowish grey; extending beyond front of eyes approximately 0.8–0.9 times diameter of eyes (in male). Front, vertex and notum pale yellowish grey. Antennal setae length approximately 0.5 times width of flagellum (in male). Wingspan 17.5 mm. Forewing rather narrow and elongate, costa slightly arched, apex pointed, termen obliquely straight; ground colour pale yellowish grey; crosslines brownish, slightly broadened and darker near costa; basal line dentated, bent with right angle near costa; antemedian line almost straight, obtuse angled near costa; the first median line slightly sinuous, crosses discal spot and sharply angled toward costa; postmedian line fine, faintly sinuate and waved, perpendicularly curved to costa; terminal area relatively narrow; pale subterminal line distinct, indented, with brownish shade on the innerside; terminal line narrow, dark brown, interrupted by veins; discal spot large, obliquely elongate, rather ovate-oblong, intensely black. Hindwing with shallowly concave termen near apex; of the same colour, mottled and irrorate with dark brown scales; crosslines indistinct, except basal and postmedian lines; terminal area very narrow; pale subterminal line conspicuous, indented, running near termen; discal spot distinct, relatively large, elongate, paler than those on the forewing. Fringe whitish



**Figs. 7–14.** Male genitalia of *Eupithecia*. 7–10 – *E. lentiscata* Mabille, 1869 (Greece, ZMUC): 7 – ventral view (in the circle: apex of uncus at right side), 8, 9 – aedeagus with vesica everted from the two positions, 10 – 8th sternite; 11–13 – *E. deverrata* Chrétien, 1910 (France): 11 – ventral view (in the circle: apex of uncus at right side), 12 – aedeagus, 13 – 8th sternite; 14 – *E. distinctaria* Herrich-Schäffer, 1848 (France), 8th sternite.

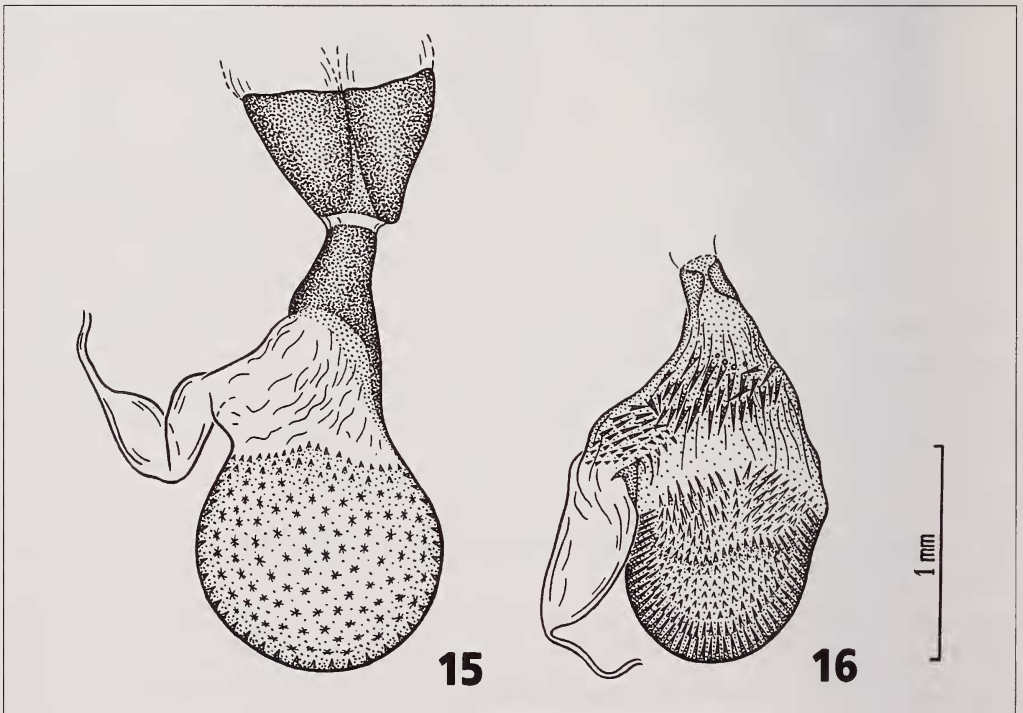
yellow, slightly spotted brownish at vein endings. Abdomen ventrally smoky-white, dorsally pale yellowish grey.

Male genitalia (Figs. 11–13). – Uncus bifid, medium length, with elongated basal part. Papillae short and broad, length approximately 0.5 times uncus length. Valva with short, broad and blunt ventral process near base, preceded by shallow medial cleft; with straight dorsal margin, tapered to apex; sacculus heavily sclerotized. Vinculum short, medium width. Aedeagus relatively long, slim, length approximately equal to valva length, approximately 4.0 times longer than medial width. Vesica armed with one broad, flat

apical sclerite and with one elongated, broad, twisted sclerite at ductus ejaculatorius base. 8th sternite peg-like, slightly broadened at base; basal cleft shallow; with one short and broad sclerotized apical rod; sternite length approximately 0.6 times valva length. Distribution. – Occurs from Morocco (ssp. *lecerfi* Prout, 1928) to Lebanon (ssp. *prouti* Zerny, 1933).

Similar species. – According to the structure of male genitalia, *E. deverrata* is closely related to *E. distinctaria* Herrich-Schäffer, 1848. There is no difference in structure of the male genitalia between these species. However, the 8th sternite of male *E. deverrata* is heavily sclerotized, with the basal cleft shallower, the apical project shorter, broader and more blunt than those in *E. distinctaria* (Fig. 14). The adults of *E. deverrata* rather similar to *E. liguriata*, but can be distinguished by the less arched costa near apex, the more pointed apex and the less rounded termen of forewing, the yellowish suffusion. The costal spots on the forewing smaller, the antemedian line obtuse, angled near costa, the postmedian line less curved, the pale subterminal line more distinct and more indented, with inner shade; on the hindwing the postmedian line less angled than those in *E. liguriata*.

Note. – The first record for Europe. The specimen mentioned under *Material* entry above had been misidentified as *Eupithecia liguriata*.



**Figs. 15–16.** Female genitalia of *Eupithecia*. 15 – *E. mandarinca* sp. n., holotype, bursa copulatrix; 16 – *E. spadiceata* Zerny, 1933 (Ukraine, Crimea), bursa copulatrix.

***Eupithecia mandarinca* sp. n.****(Fig. 3)**

Material examined. – Holotype ♀, Ukraine, Crimea, Karadagh, 26.vi.1924, at light (Djakonov leg.). Prep. gen.: No. 304. ♀ (Djakonov) (ZISP).

Diagnosis. – Labial palpi whitish grey; extending beyond front of eyes approximately 0.66 times diameter of eyes. Front, vertex and notum whitish grey. Wingspan 16.0 mm. Forewing with slightly arched costa, pointed apex and obliquely faintly rounded termen; ground colour whitish grey; crosslines light brownish grey; basal, ante- and postmedian lines forming a broad dark costal spots; basal and antemedian lines evenly curved; postbasal line inconspicuous; postmedian line slightly sinuous, three times obtusely angled toward costa; terminal area broad, darker, brownish grey; whitish subterminal line wide, broken; terminal line very weak defined, fine, brownish grey, interrupted by veins; discal spot large, elongate, rather ovate-oblong, brownish grey. Hindwing with weakly concave termen; slightly paler, whitish grey; basal and medial areas mottled and irrorate with brownish grey scales; terminal area broad, darker, brownish grey as on the forewing; pale subterminal line rather indistinct, indented, fine and broken; discal spot large, narrow and elongate, dark brownish grey. Fringe smoky-white, marked with brownish grey at vein endings.

The holotype lacks antennae, abdomen removed (see *Note* below).

Female genitalia (Fig. 15). – Bursa copulatrix pear-shaped; completely covered by small spines in broadest basal part; with narrower, spineless heavily sclerotized ductus bursae, which without longitudinal striations. Ductus seminalis membranous, broadly attached to medial part of corpus bursae. Ostium bursae large, broad, funnel-like, heavily sclerotized, with two long and broad ventral lobes.

Distribution. – Ukraine (Southern Crimea).

Flight. – The single known specimen was caught at light late June.

Similar species. – *E. limbata* Staudinger, 1879, the only species with which it may be confused. The new species distinguished externally from nominate subspecies of *E. limbata* in the paler ground colour, the more curved antemedian line; the postmedian line curved around discal spot at shorter distance; short and black touches on the veins of forewing absent. Unlike *E. limbata* it has indistinct crosslines on the hindwing, the terminal areas brownish-grey, without rust tint, the terminal lines inconspicuous, paler, but not black, and lighter, larger and more elongated discal spots are situated on the whole wings. The female of *E. mandarinca* sp. n. has a more elongated bursa copulatrix than that in *E. limbata*.

Note. – The genitalia slide of the type-specimen is apparently lost, however two good sketches of its genitalia were found in the archives of A. M. Djakonov.

***Eupithecia reisserata* Pinker, 1976****(Fig. 4)**

Material examined. – ♂, 8♀, Greece, Arkadia, 19 km S. of Argos, 17.iv.1981; Arkadia, Astros, 19.iv.1981; Thrakia, S. of Ismaros, 150 m, 30.iv–1.v.1988; Sithonia, 6 km NW. of Koufos, 5.v.1988. Schepler leg. (ZMUC).

Note. – The first record for Europe. The moths from Greece are larger, darker and more brown than those of the nominotypical subspecies from Anatolia and Naxçivan

(Azerbaijan). They are rather similar to ssp. *levarii* Hausmann, 1991 described from Jordan. The sclerites on the vesica in the male genitalia of this species are very variable, as reported for the first time by Hausmann (1991).

***Eupithecia spadiceata* Zerny, 1933**

(Figs. 5–6)

Material examined. – ♀, Ukraine, Crimea, Krasnolesye, 7.vii.1986, Zaguljaev leg. (ZISP).

Note. – The first record for Europe. I found a single Crimean specimen of this species in poor condition on a cotton layer. The genitalia of this specimen are illustrated (Fig. 16).

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**References**

- Hausmann, A. 1991. Beitrag zur Geometridenfauna Palästinas: Die Spanner der Klapperich-Ausbeute aus Jordanien (Lepidoptera, Geometridae). – Mitt. münch. Ent. Ges. 81: 111–163.
- Müller, B. 1996. – In: Karsholt, O., Razowski, J. (eds). The Lepidoptera of Europe, a distributional checklist. – Apollo Books, Stenstrup, Denmark. 380 pp.
- Söderman, G., Lundsten, K.-E. & R. Leinonen 1998. Luoteis-Venäjän yöperhosseurannan tulokset 1995–1997 [Results from the Moth Monitoring Scheme in Northwestern Russia 1995–97]. – Baptria 23(4): 219–230.